

Characterizing the puzzling photometric microvariability of sdO stars with K2

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Hot O subdwarf (sdO) stars are evolved compact objects whose evolutionary status remains difficult to establish. Some of them should correspond to the post-EHB evolutionary stage and consequently were former sdB stars. However many seem to have other unclear origins. During a recent survey for pulsations in field sdO stars, we noticed that our precision light curves for many sdO stars sometimes exhibited very small, irregular variations on time scales of several minutes to several tens of minutes (Green et al. 2014). Repeated observations on several of them even captured unexpected drops in luminosity by up to 0.05-0.10 mag, during which their light flickered irregularly in a manner reminiscent of the light from accretion disks in cataclysmic variables. This suggests the presence of accretion disks analogous to those in VY Scl stars. The small luminosity variations we observed in a number of other sdO stars indicate that they too could occasionally be capable of similar larger luminosity variations, and thus accretion disks might be associated with a significant number of sdO stars. However, the structure of such sdO systems is not at all clear. Kepler 2 provides a unique and much welcomed opportunity to monitor sdO stars present in the selected fields. The long time baseline and uninterrupted high precision photometric data of K2 will be critical for characterizing these puzzling phenomena and provide answers concerning their possible origin.